



Industrial Ethernet & Cybersecurity Network Training

DATES



Tuesday, May 14th
Wednesday, May 15th
Thursday, May 16th

LOCATION



Houston Marriott Energy
Corridor
16011 Katy Freeway
Houston, TX 77094
Phone: 281-829-5525

HOURS



Class: 8:30 am - 4:30 pm
Lunch: 12:00 pm - 1:00 pm
Lunch Provided

ETHERNET IN INDUSTRY

Ethernet communications is widely-used in control systems. To design, secure, and maintain reliable networks it is important that engineers and technicians have an in-depth understanding of the technologies available in industrial Ethernet hardware. This class starts at the Physical Layer of the OSI model and works up through the Layers 2, 3, and 4 allowing the participant to understand how the basic network building blocks (switches, routers, and firewalls) function. Once the basics are understood, advanced features like redundancy, VLANs, prioritization, multicast management are presented. The third day focuses on cybersecurity technologies and introduces the basics of industrial control systems security. Topics include standards & organizations, Purdue Model, tools & technologies and network monitoring. The training will provide a foundation for applying industrial cybersecurity technologies.

INSTRUCTORS

Learning about Ethernet technology is only helpful when coupled with knowledge of how the technology can fit into the unique requirements of the industrial user. Keeping this need in mind, our classes are taught by an engineer with vast experience designing and implementing plant control systems. Don't settle for training geared for front office IT personnel!

REGISTRATION

Catherine Birkett

cbirkett@industrialnetworking.com
(800) 889-1461

COST

\$1,450 – Includes three-day training, course binder, refreshments and lunch.

Hotel accommodations are the responsibility of attendees. Mention INS at booking for group rate.

CONTACT INS

Main Office	(800) 889-1461 (972) 248-9533 Fax
Gulf Coast	(281) 893-5550
Midwest	(800) 889-1461
Northeast	(412) 297-9874
Northwest	(510) 876-6394
Southeast	(770) 546-8580
Southwest	(972) 248-7466
Western	(949) 370-4775

DAY ONE - ETHERNET NETWORKING BASICS - ETHERNET 101

After attending this Industrial Ethernet basics course, the student should be familiar with the basics of Ethernet networks, including the ability to design and install a simple plant Ethernet network.

- **Historical Overview**
- **Layer 1 – The Physical Layer**
 - Equipment
 - Topologies
 - Media
- **Layer 2 – The Data Link Layer**
 - Ethernet Frame
 - MAC Addresses
 - Switches
- **Layer 3 – The Network Layer**
 - IP Packet
 - IP Addresses
 - Routers

Session 8:30 am - Noon	Lunch Noon – 1:00 pm	Session 1:00 - 4:30 pm
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DAY TWO - ADVANCED ETHERNET & EMERGING TECHNOLOGIES - ETHERNET 201

After attending this class, participants should have a clear understanding of the technology required for interconnecting LAN segments within their facility. They will also have an understanding of the various advanced features managed-network devices offer, how these features are configured, and applied. Finally, participants will have a good overview of emerging Ethernet and networking technologies applicable to industrial network environments.

- **Layer 2/3 Plus – Advanced Networking**
 - Diagnostics (Port Configuration & Mirroring)
 - Virtual Local Area Networks (VLAN)
 - Building Redundancy in Networks (LACP, STP, MRP, DLR, PRP, HSR)
 - Multicast Management (IGMP)
- **Layer 4 – The Transport Layer**
 - Segments
 - Ports
 - Firewalls
 - Access Control Lists (ACL)
- **Layer 5-7 – Applications Layer**
 - Industrial Protocols (EIP, Modbus TCP, PROFINET)
 - Dynamic Host Configuration Protocol (DHCP)
 - Simple Network Time Protocol (SNTP)
 - Precision Time Protocol (PTP)

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DAY THREE - INDUSTRIAL CYBERSECURITY

After attending this class, participants should have a general understanding of how to identify areas of vulnerability, and have the basics for designing and implementing a secure network architecture.

- **The BIG Security Picture**
- **Standards & Organizations**
 - ICS-CERT
 - NIST – Risk Management and the Security Process
 - IEC62443 – Perdue Model, Zones, and Conduits
- **Asset Identification and Vulnerabilities**
- **Tools and Technologies**
 - Education
 - Increasing Physical Security
 - Zones, Packet Filtering, and Next Generation Firewalls
 - Securing Network Hardware
 - Securing Remote Access
 - Securing Endpoints
- **Monitoring Inside and Out**
 - Simple Network Management Protocol
 - SYSLOG
 - Security Information and Event Monitoring (SIEM)
- **Responding to and Recovering from a Cybersecurity Event**
- **Cybersecurity Starting Point**

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